

Remarks

Reconsideration and allowance of this application, as amended, are respectfully requested.

Claim 3 has been amended so as to correctly depend from claim 1. Claims 1 and 3-20 remain pending in the application. Claims 1, 16, and 18 are independent. The rejections are respectfully submitted to be obviated in view of the amendments and remarks presented herein. No new matter has been introduced through the foregoing amendments. Entry of each of the amendments is respectfully requested.

As required, Applicants provide the following statement of the substance of the telephonic interviews conducted on June 10 and 11, 2010. On June 10, the examiner telephoned the Applicants' representative and requested authorization for entry of an Examiner's Amendment (amending claims 1, 16, and 18) that would place all of claims 1 and 3-20 in condition for allowance. On June 11, 2010, Applicants' representative telephonically authorized the proposed Examiner's Amendment. The examiner subsequently telephoned Applicants' representative on June 21, 2010, to advise that the U.S. Patent and Trademark Office ("USPTO") had decided to apply a newly-cited prior art reference, and that a new, non-final Office Action would issue.

As confirmed by the examiner by telephone on September 21, 2010, Applicants note that the Examiner's Amendment was never entered in view of the USPTO's subsequent decision to issue the

outstanding Office Action instead of allowing the application. Therefore, all of claims 1, 16, and 18 (and claims 4-15, 17, 19, and 20) remain *as previously presented*.

35 U.S.C. § 103(a) - McMaster, Shodor, and Biersach

Claims 1, 3-8, 18, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the *Nondestructive Testing Handbook*, Robert C. McMaster, Editor (hereinafter "McMaster") in view of "Gas Laws," developed by the Shodor Education Foundation, Inc. ("Shodor") and U.S. Patent No. 5,006,391 to Biersach.

The rejection of claims 1, 3-8, 18, and 20 under § 103(a) based on McMaster, Shodor, and Biersach is respectfully traversed. For at least the following reasons, the combined disclosures of McMaster, Shodor, and Biersach would not have rendered obvious Applicants' claimed invention.

Applicants' claimed subject matter is directed to a method for leak-testing a component made of a composite material consisting of at least one cover layer and a construction core having a plurality of cavities. As explained in Applicants' Amendment filed March 11, 2010, claim 1 defines a method of leak-testing a component that includes, *inter alia*, "at least the component area to be tested being cooled before being wetted with the testing liquid, and the temperature increase being effected by allowing the component to heat to room temperature."

For the following reasons, Applicants respectfully submit that the asserted combination of prior art references (i) would not be logical to the person having ordinary skill in the art and (ii) is based upon an *impermissible* hindsight reconstruction, i.e., one made only in view of Applicants' disclosure.

Primary prior art reference McMaster generally describes a method for leak location based on bubble emission from a blanket of liquid foam. However, as admitted in the Office Action, McMaster is completely silent with regard to the leak testing of composite materials. Thus, McMaster is not properly applied as the closest prior art. In fact, the person having ordinary skill in the art would search the field of a composite material enclosing a plurality of cavities for existing leakage tests.

As disclosed in the instant specification and as explained in Applicants' last response, the aviation industry and related industries have relied upon cumbersome and comparatively imprecise submersion techniques for detecting flaws in such composite materials. The aforementioned submersion techniques were routinely used for testing composite materials long after the McMaster reference was published. This fact, in and of itself, is indicative of the nonobviousness of the presently claimed subject matter. Since McMaster is completely silent with regard to the testing of composite materials and the difficulties associated therewith, the person skilled in the art who is addressing the

leak-testing of composite materials most certainly would not consider the teachings of McMaster.

With regard to the leak-testing of composite materials, to rectify the deficiencies of McMaster, the Office Action relies upon the teaching of Biersach. The Biersach patent discloses a honeycomb panel 10, with outer surface sheets 12, 14 spaced apart from each other. However, with respect to the presently claimed subject matter, Biersach merely reveals that such honeycomb panels are known *per se* in the art. But, Applicants' claimed invention is not simply directed to a composite structure. Rather, it is directed to a method for leak-testing a component made of a composite material.

Furthermore, the Office Action points to the disclosure of Biersach (column 5, lines 29-34), which mentions an integral flange 74 extendible around the entire periphery of the first surface sheet 12 to provide hermetic sealing to the second surface sheet 14. Biersach further discloses that the honeycomb core panel 10 may be used while submerged in water. From the aforementioned disclosure it follows, the Office Action continues, that it would be obvious to perform McMaster's leakage test in order to test the hermeticity of panel 10.

However, Applicants note that Biersach is completely silent with regard to any kind of flaws or leaks that could be present in the honeycomb panel 10. Biersach merely explains that other types of honeycomb materials were prone to corrosion and thus

were not usable in water (column 1, lines 38-43). This, however, has nothing to do with leak detection, which is not restricted to waterproof structures. Accordingly, Biersach does not provide any incentive to identify leaks in the panel 10 with the method of McMaster. In particular, Biersach fails to explain if and how flaws in the panel 10 could be identified. Thus, the person having ordinary skill in the art would not combine the teaching of Biersach with that of McMaster.

In addition, claim 1 requires that the component area to be tested be cooled before being wetted with the testing liquid, and that the temperature increase then be effected by allowing the component to heat to room temperature. This feature of Applicants' claimed method is not suggested by any of the applied prior art references.

McMaster teaches that for increasing the pressure differential, small test objects may be heated. Thus, McMaster teaches the opposite of the presently claimed method, which provides for a cooling step followed by an increase of temperature to room temperature. Accordingly, the known leakage test according to McMaster indeed leads away from the instant invention.

The Office Action contends that the aforementioned features of the presently claimed invention would be obvious in view of the disclosure of Shoder. The Shoder reference, however, merely discloses how the ideal gas law describes the relationship between volume, temperature, and pressure of an ideal gas. It is

of course well known in the art to change one of pressure, temperature, or volume to influence the respective quantities of an ideal gas.

However, the ideal gas law fails to provide any teaching that would lead one to arrive at the presently claimed sequence of *first* cooling the component area to be tested and *then* allowing the component to heat to room temperature. The person skilled in the art would not derive from the ideal gas law the presently claimed steps of cooling the test area before effecting the required temperature increase by letting the component gradually approach the ambient room temperature. This feature enables an energy-efficient and cost-saving technique, which is not at all suggested by any of the cited prior art references.

Accordingly, the combined disclosures of McMaster, Shodor, and Biersach would not have rendered obvious the invention defined by claim 1. Claims 3-8 are allowable because they depend, either directly or indirectly, from claim 1, and for the subject matter recited therein.

Independent claim 18, which is described in Applicants' Amendment filed March 11, 2010, is similarly allowable. Claim 20 is allowable because it depends from claim 18, and for the subject matter recited therein.

35 U.S.C. § 103(a)

Since the McMaster/Shodor/Biersach combination is applied in three of the other rejections under § 103(a) -- claims 8-10 and 19 as being unpatentable over McMaster in view of Shodor and Biersach and further in view of U.S. Patent No. 3,664,965 to Hirota et al. ("Hirota '965"); claims 11-13 and 15 as being unpatentable over McMaster in view of Shodor and Biersach and further in view of U.S. Patent No. 4,113,673 to Hirota et al. ("Hirota '673"); and claims 5, 14, and 20 as being unpatentable over McMaster in view of Shodor and Biersach and further in view of U.S. Patent No. 4,553,435 to Goldfarb et al. ("Goldfarb") -- each of these rejections is also respectfully traversed.

Claims 5 and 8-15 depend, either directly or indirectly, from claim 1. Claims 19 and 20 depend from claim 18. Claims 1 and 18 are allowable over the McMaster/Shodor/Biersach combination for the reasons presented above. Claims 5, 8-15, 19, and 20 are, therefore, also allowable. And, the combined disclosures of the cited references would not have rendered obvious Applicants' claimed invention because the disclosures of Hirota '965, Hirota '673, and Goldfarb do not rectify any of the above-described deficiencies of McMaster, Shodor, and Biersach.

Furthermore, there is simply no teaching in any of the references that would have led one to select the references and combine them in a way that would produce the invention defined by any of Applicants' pending claims.

The rejection of claim 16 under § 103(a) as being unpatentable over McMaster in view of Biersach, and the rejection of claim 17 under § 103(a) as being unpatentable over (i) McMaster in view of Biersach or (ii) McMaster in view of Biersach and Goldfarb and further in view of U.S. Patent Application Pub. No. 2002/0012767 of Ueda et al. ("Ueda") are also respectfully traversed.

Previously presented claim 16 defines a method that includes "wetting a test area located on at least one side of the component with a film of a foam-forming testing liquid; subjecting the component and a gas that is contained in the cavities to a temperature increase by irradiating the component; and checking the test area for bubble formation of the testing liquid resulting from the escape of expanded heated gas through a defect in the component."

The disclosures of McMaster and Biersach are deficient for at least the reasons outlined above. The references are not logically combined, and even when combined, do not teach each feature of the method defined by claim 16.

Accordingly, the combined disclosures of McMaster and Biersach would not have rendered obvious the embodiment of the invention defined by claim 16.

Claim 17 is allowable because it depends from claim 16, and for the subject matter recited therein. And, the combined disclosures of the cited references would not have rendered obvious

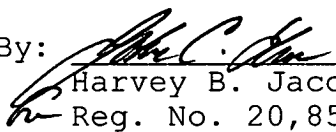
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Applicants' claimed invention because the disclosures of Goldfarb and Ueda do not rectify any of the above-described deficiencies of McMaster and Biersach.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that another interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

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